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| 09/841,156 | 04/25/2001 | Shunpei Yamazaki | 12732-033001 | 4159 |
| 26171 7590 08/20/2007 FISH & RICHARDSON P.C. P.O. BOX 1022 MINNEAPOLIS, MN 55440-1022 | | | EXAMINER DOLAN, JENNIFER M | |
| | | | ART UNIT 2813 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

09/841,156

Applicant(s)

YAMAZAKI ET AL.

Examiner

Jennifer M. Dolan

Art Unit

2813

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 12, 14, 19, 23-45, 47, 48, 50, 51, 53-70 and 91 is/are pending in the application.
- 4a) Of the above claim(s) 23-45 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9-12, 14, 19, 47, 48, 50, 51 and 53-70 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 April 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to the Amendment filed 8 June 2007

Election/Restrictions

1. Claims 23-45 were withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was by original presentation, as set forth in the Office Action of 05 June 2003.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 9 and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,280,559 to Terada et al. in view of U.S. Patent No. 5,276,999 to Bando, U.S. Patent No. 6,320,309 to Nomura et al., and U.S. Patent No. 5,040,875 to Noguchi et al.

Terada discloses forming a plurality of light emitting elements (34) at the front surface of a substrate (1; see figure 4), the substrate being formed of, *inter alia*, glass or polymeric material (figure 4; column 15, lines 41-51); polishing a back surface of the first substrate by a grinding method to thereby reduce the thickness to, *inter alia* 75 μm (i.e., less than 300 μm ; see column 26, lines 38-41); and bonding a color filter (35) adjacent the light-emitting element (see figure 4),

Art Unit: 2813

the color filter made from a transparent substrate (37) with red (47) green (48) and blue (49) color filter elements including red, green, and blue colored layers, respectively (see column 18, lines 65-66) thereon at the surface of the first substrate opposite to the light emitting elements (see column 26, lines 45-61).

Terada fails to specifically indicate that the grinding method employed is chemical mechanical polishing. Terada further does not teach use of a distinct red light emitting element, a green light emitting element, and a blue light-emitting element. Terada further does not teach overlapping of the color filter layers.

Bando teaches that chemical mechanical polishing is used to grind light emitting display substrates, in order to achieve the flatness required for displays (see column 1, lines 6-12; column 5, lines 25-30).

Nomura teaches that a white light emitting element with red, green, and blue filters can be used interchangeably with distinct red, green, and blue light emitting elements having red, green, and blue filters, respectively (phosphor layers r, g, and b and color filters R, G, and B in figure 3; also see column 7, lines 1-9). Nomura further teaches that the red, green, and blue light emitting elements are formed by screen printing (column 5, lines 59-61).

Noguchi teaches that it is desirable to have an overlap of red, green, and blue filters at the boundary of adjacent pixels, in order to form a black matrix, and thereby improve purity of each distinct color (see figures 6 and 9; column 2, lines 15-25 and lines 47-62; column 5, lines 45-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Terada by using CMP as a grinding process, as suggested by Bando, by using distinct red, green, and blue light emitting elements formed by screen printing,

Art Unit: 2813

as suggested by Nomura, and by using overlapping red, green, and blue filters, as suggested by Noguchi. The rationale is as follows: a person skilled in the art would employ CMP as a grinding method, because both CMP and mechanical grinding methods are notoriously old and well known in the art for substrate thinning and polishing, and in order to achieve the high degree of flatness desirable for the light emitting display as in Terada (see Bando, column 5, lines 25-30; column 1, lines 6-12).

A person skilled in the art would further employ distinct red, green, and blue light emitting elements in place of the wide spectral band white emitting element, because Nomura teaches that both options are art recognized equivalents usable interchangeably in the art, and that both options are suitable for producing red, green, and blue pixels for full color light emitting displays (see Nomura, figure 3; column 7, lines 1-9). It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945). It is further expected that use of the light emitting elements taught by Nomura would entail the formation methods, such as screen printing, taught by Nomura, particularly since screen printing is a well-known means for depositing of phosphor materials.

A person skilled in the art would even further use color filters that overlap at the edges, because Noguchi indicates that the overlap of red, green, and blue color filters at the edge of the pixel emissive area effectively acts as a black matrix, thereby inhibiting color mixing of adjacent pixels and improving color purity (see Noguchi, figures 6 and 9; column 2, lines 15-25 and 47-62; column 5, lines 45-55). Since Terada employs a black matrix (50) between the color filter elements for identical purposes as that in Noguchi (see Terada, column 16, lines 5-15), a person

Art Unit: 2813

skilled in the art would readily recognize that the overlapping color filters in Noguchi are an art-recognized suitable means for providing a black matrix, and at least would provide the desirable effect of improved color purity while not requiring disposal and patterning of a black matrix material. Note that it has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

4. Claims 10 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada et al. in view of Bando, Nomura et al., Noguchi et al., and further in view of U.S. Patent No. 6,392,340 to Yoneda et al.

Terada in view of Bando, Nomura, and Noguchi discloses all of the claimed features, as explained in the rejection of claims 9 and 55, except forming a thin film transistor for an electroluminescent display.

Yoneda teaches that it is known in the art for light emitting elements to be electrically connected to a semiconductor element/thin film transistor, so that the TFTs can act as switching or control elements for the light emitting device (see Yoneda, column 1, lines 14-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to electrically connect a TFT to the light emitting element, as suggested by Yoneda. The rationale is as follows: a person having ordinary skill in the art would connect a TFT to the light emitting device, because use of TFTs to control the emission of the electroluminescent element for flat panel displays is notoriously old and common in the art, and provides the

Art Unit: 2813

additional advantage of permitting selective driving of individually addressed pixels (also see Yoneda, column 1, lines 14-43).

5. Claims 11, 12, 14, 19, 47, 48, 50, 51, 61, 64, 67, and 70 are rejected under 35 U.S. C. 103(a) as being unpatentable over Terada in view of Bando, Nomura, and Noguchi et al. and further in view of U.S. patent No. 4,963,788 to King et al.

Regarding claims 11, 12, 47, 50, 61, 64, 67, and 70, the prior art of Terada in view of Bando, Nomura, and Noguchi, as explained in the rejection of claims 9 and 55, supra, discloses each of the claimed features, except for bonding a polarization plate (claims 11 and 12) or an anti-reflective film (claims 47 and 50) to the transparent substrate of the color filter.

King teaches a thin film electroluminescent display, wherein contrast is improved by providing a polarizer or antireflective coating on the viewer's side surface/emissive surface of the display (see King, column 1, lines 28-42 and column 5, lines 9-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to add the polarization plate or antireflective coating to the transparent color filter substrate, as suggested by King, in the method of Terada, Bando, Nomura, and Noguchi, in order to improve the contrast of the display (see King, column 1, lines 28-42; column 5, lines 9-17).

Regarding claims 14, 19, 48, and 51, Terada teaches that an exemplary transparent substrate material for the color filter substrate is glass (see column 25, lines 22-24). Glass is inherently considered a polymeric material (see Stuart M. Lee article – "Lunar Building Materials – Some Considerations on the Use of Inorganic Polymers" (cited in the previous office actions) for a showing of inherency only).

6. Claims 47, 48, 50, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada in view of Bando, Nomura, and Noguchi, and further in view of U.S. Patent No. 6,476,783 to Matthies.

Regarding claims 47 and 50, Terada in view of Bando, Nomura, and Noguchi teach all of the claimed features, as explained supra in the rejections of claims 9 and 55, except the step of bonding an antireflection film to the transparent substrate.

Matthies teaches that bonding an antireflective coating on the viewer's surface/emissive surface of an EL display will reduce specular reflectance (see Matthies, paragraph bridging columns 9 and 10).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Terada in view of Bando, Nomura, and Noguchi, such that an antireflective film is bonded to the transparent substrate of the color filter, as suggested by Matthies, in order to remove specular reflectance, and thereby improve the contrast of the EL device (see Matthies, paragraph bridging columns 9 and 10).

Regarding claims 48 and 51, Terada teaches that an exemplary transparent substrate material for the color filter substrate is glass (see column 25, lines 22-24). Glass is inherently considered a polymeric material (see Stuart M. Lee article – "Lunar Building Materials – Some Considerations on the Use of Inorganic Polymers" (cited in the previous office actions) for a showing of inherency only).

Art Unit: 2813

7. Claims 53, 54, 56, and 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada in view of Bando, Nomura, and Noguchi, and further in view of U.S. Patent No. 6,252,253 to Bao et al.

Terada, as modified by Bando, Nomura, and Noguchi et al. teach all of the limitations in the claims, except that the red, green, or blue light emitting elements are formed by deposition using a shadow mask or by ink-jet deposition.

Bao teaches forming a red light emitting element using a shadow mask, ink jet method, or screen printing method. Bao expressly teaches that these methods are suitable and usable interchangeably for forming the light emitting element (column 8, lines 44-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Terada in view of Bando, Nomura, and Noguchi, such that shadow mask deposition or ink jet deposition are used for forming the light emitting elements, as suggested by Bao. The rationale is as follows: one with ordinary skill in the art would employ shadow mask deposition or ink-jet deposition for the formation of the light emitting element, because Bao shows that both methods are usable interchangeably with the screen printing method used in Nomura, and that all three methods are recognized as suitable for forming the electroluminescent element (see Bao, column 8, lines 44-48). It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Art Unit: 2813

8. Claims 59, 60, 62, 63, 65, 66, 68, and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terada in view of Bando, Nomura, Noguchi, and King et al. as applied to claims 11, 12, 47, and 50, supra, and further in view of Bao et al.

Terada, as modified by Bando, Nomura, Noguchi, and King, teach all of the limitations in the claims, except that the red, green, or blue light emitting elements are formed by deposition using a shadow mask or by ink-jet deposition.

Bao teaches forming a red light emitting element using a shadow mask, ink jet method, or screen printing method. Bao expressly teaches that these methods are suitable and usable interchangeably for forming the light emitting element (column 8, lines 44-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the method of Terada in view of Bando, Nomura, and Noguchi, such that shadow mask deposition or ink jet deposition are used for forming the light emitting elements, as suggested by Bao. The rationale is as follows: one with ordinary skill in the art would employ shadow mask deposition or ink-jet deposition for the formation of the light emitting element, because Bao shows that both methods are usable interchangeably with the screen printing method used in Nomura, and that all three methods are recognized as suitable for forming the electroluminescent element (see Bao, column 8, lines 44-48). It has been held that the selection of a known material based on its suitability for its intended use supports a prima facie obviousness determination. See *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Response to Arguments

9. The Applicant's arguments filed 8 June 2007 have been carefully considered. The Examiner notes that all arguments are drawn to the newly added limitation of having at least two of the respective colored layers overlap. Since U.S. 5,040,875 to Noguchi et al. is incorporated into the rejections to address this limitation, the Applicant's arguments are considered moot based on the new grounds of rejection necessitated by the 8 June 2007 Amendment.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. US 6,433,486 to Yokoyama teaches an RGB EL display wherein the light transmission is through the lower transparent substrate, and wherein transistors are used to drive the individual pixels of the display.
- b. US 5,870,157 to Shimada teaches the use of overlapping RGB color filters at the edge of each pixel.
- c. US 5,559,397 to Tsuruoka et al. teaches use of overlapping RGB color filters at the edge between pixels to thereby generate a black matrix.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Dolan whose telephone number is (571) 272-1690. The examiner can normally be reached on Monday-Friday 8:30am-5:00pm.

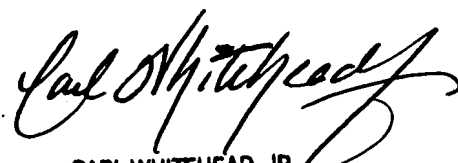
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl W. Whitehead, Jr. can be reached on (571) 272-1702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2813

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jennifer M. Dolan
Examiner
Art Unit 2813

jmd



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